



APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

**NETWORK-BASED SYSTEM AND METHOD FOR  
ACCESSING AND PROCESSING LEGAL DOCUMENTS**

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"Express Mail" Label Number EL41499913245

Date of Deposit March 7, 2000

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Melanie Besecker 3-7-00  
Melanie M. Besecker Date

# **NETWORK-BASED SYSTEM AND METHOD FOR ACCESSING AND PROCESSING LEGAL DOCUMENTS**

## **BACKGROUND OF THE INVENTION**

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### **1. Field of the Invention**

The present invention generally relates to the communication of information over a network, and in particular, relates to the accessing and processing of legal documents via a network, such as the Internet.

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### **2. Background Information**

The legal profession is a profession that requires the review of voluminous amounts of documentation by attorneys. For example, during a document-intensive litigation process known as "discovery," one party (e.g., a "requesting party") frequently requests another party (e.g., a "responding party") to produce documents. The requesting party attempts to build its case by reviewing the requested documents and trying to locate highly significant individual documents (sometimes referred to as "hot documents") that contain text or other information of an incriminating nature.

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Document review is an extremely laborious and time-intensive activity. Documents first need to be requested by the requesting party and then produced by the responding party. Litigation strategies dictate that the requesting party try to craft its discovery requests such that the responding party is obligated to produce documents falling within the scope of the requests. Frequently, especially in large

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litigation cases, discovery requests are drafted very broadly, resulting in the production of thousands of pages of documents, of which only a few pages may be responsive or relevant, if any at all.

The sheer volume of produced documents requires hundreds of hours of attorney and paralegal time to index (e.g., identify and sort each page by a numbering system that uses "Bates numbers") and to review the documents. Frequently, due to the expense of photocopying, only a single set of copies of the produced documents is available to the requesting party, and copies are only made of hot documents when they are located. As such, document review is often characterized by logistic and storage problems, with a group of legal professionals reviewing the produced documents, page by page, in a single room where everyone in the group can have access to the documents. Whenever a hot document is located, that document is typically photocopied or marked (e.g., manually "highlighted" with a highlighter pen, tabbed with a marker, or otherwise identified using manual techniques), and then manually indexed or referenced for later identification and use.

Documents are often produced to the requesting party in random boxes or stacks of pages, and there is virtually no means for efficiently sorting through the stacks and identifying hot documents. That is, other than manually reading each page line by line, it is virtually impossible to sort, organize, or search through the stacks of pages based on criteria such as date, author, recipient, subject matter, etc. Simply stated, document review is a time-consuming and expensive manual process.

With the increased use of network communications in recent years, such as the use of email via the Internet or via a company's internal network, email and other electronic documents are gaining the attention of legal professionals as a

rich source of discoverable information. Email is rapidly displacing traditional documents (e.g., letters, contracts, memos, faxes, etc.) as a primary communication medium for business and personal correspondence. Because individuals are more inclined to communicate informally via email, email often contains crucial evidence and is exchanged at a higher rate than traditional documents. Indeed, during the well-publicized case of *United States v. Microsoft Corporation*, Civil Action No. 98-1233 (TPJ) (D.D.C. November 5, 1999), email correspondence reviewed during the course of discovery was significant in building the United States governments' case against Microsoft. Such cases are becoming more common, where hundreds of thousands of email messages may be involved during litigation.

Although cases such as these are often viewed as "high tech" cases because the subject matter of discovery (e.g., emails or other electronic documents) involves electronic media rather the information printed on paper, these cases are nevertheless constrained to traditional discovery methods. The electronic email documents are downloaded and printed on paper (e.g., "hardcopies"), and then reviewed using the same types of manual reviewing and indexing procedures as used for traditional paper-printed documents. That is, the process involves meticulously analyzing each hardcopy document for specific evidence; indexing/recording which documents have been read, which contain evidence, etc.; and collecting the necessary evidence to develop a legal strategy.

There is virtually no means to control the timing of the discovery critical documents. The pivotal evidence might be discovered at any point during the process of reviewing hardcopy emails, which leaves legal teams with an incomplete picture of the evidence upon which to base their strategy. As is common, the focus or strategy of the litigation may change repeatedly during discovery. Thus, previously reviewed documents that were initially dismissed as irrelevant may need

to be repeatedly reviewed. Often, the relevancy of individual documents is difficult to ascertain unless viewed in context along with a large body of documents. Obviously, these problems are aggravated when using traditional manual methods for processing paper documents.

5           Printing email from its native electronic format into a hardcopy results in the destruction of useful characteristics of email, even if hardcopies are scanned into an imaging database. For example, attachments and nested documents become detached and disassociated from their corresponding email messages. Metadata (e.g., date/time stamps, author identification, attachment data, tracking  
10 IDs, headers, etc.) are lost when email is printed.

          Conversation threads revealing the contextual relationships between messages are also lost. For example, a response to an email message asking whether or not someone intended to commit an illegal act might be a one-word message simply stating "yes." This reply could be a pivotal in a lawsuit, but if it  
15 became disconnected from the email containing the question (as would happen if the email message were printed), the reply would be rendered utterly meaningless. This problem becomes worst if there are multiple cc's, replies, forwards associated with a voluminous number of hardcopy emails. The sheer volume of email  
20 hardcopies, coupled with the lack of threading (or other easily identifiable contextual mechanisms), can easily overwhelm readers who, despite their efforts and attention, are nevertheless apt to make mistakes or to miss critical information. Thousands of emails must be read per day, and the emails are often a bewildering combination of disconnected questions and answers, copies of the same message, and detached attachments.

25           Accordingly, there is a need to improve the manner in which legal documents are made available for review and processing by legal professionals.

## SUMMARY OF THE INVENTION

According to one aspect of the invention, electronic documents are stored in a database system. Electronic characteristics associated with a native  
5 format of the electronic documents are stored and indexed. Access to the stored electronic documents is provided to a user terminal via a server communicatively coupled to the database system and to the user terminal. If user-input information sent from the user terminal to the server is received, the indexed electronic documents are processed according to the received user-input information in a  
10 manner that allows the processing to use the stored electronic characteristics of the electronic documents.

## BRIEF DESCRIPTION OF DRAWINGS

Non-limiting and non-exhaustive embodiments of the present invention will be described in the following figures, wherein like reference numerals refer to  
5 like parts throughout the various views unless otherwise specified.

Figure 1 shows a system for accessing and processing legal documents according to an embodiment of the invention.

Figure 2 is a functional block diagram of an embodiment of a database unit for the system of Figure 1.

10 Figure 3 is a flow diagram illustrating an example of a conversion method for loading electronic documents into the database unit of Figure 2.

Figure 4 is screenshot of a user interface according to an embodiment of the invention showing processing features for an electronic legal document.

15 Figure 5 is screenshot of a user interface according to an embodiment of the invention showing processing summary information for legal documents.

Figure 6 is screenshot of a user interface according to an embodiment of the invention showing search query results for legal documents.

Furthermore, the most significant digit of an element's reference numeral represents the figure number where that element is first introduced (e.g.,  
20 element 204 is first introduced in Figure 2).

## DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

A system and method for remote processing of electronic documents are described in detail herein. In the following description, numerous specific details are provided, such as the description of various graphical interfaces in Figures 4-6, to provide a thorough understanding of embodiments of the invention. One skilled in the relevant art will recognize, however, that the invention can be practiced without one or more of the specific details, or with other methods, components, etc. In other instances, well-known structures or operations are not shown or described in detail to avoid obscuring aspects of various embodiments of the invention.

As an overview, embodiments of the invention provide legal professionals with access to electronic legal documents, via a network such as the Internet. These legal documents can include email documents, for example, that are produced in response to discovery requests and which are loaded into a database accessible via a server. Other examples of "electronic documents" can include electronic calendars/schedules, word-processing files, spreadsheets, text and graphics files, various application files, or any other type of electronic file or data that can be stored in a computer-readable storage media, and which can be subject to a legal proceeding or need to be otherwise reviewed/accessed. Once access has been granted to authorized legal professionals, the legal professionals can perform online search queries, indexing, data manipulation, and various other online operations to obtain and track results of their document review. According to an embodiment of the invention, electronic characteristics (e.g., metadata and other properties) associated with a native format of the electronic legal documents can be substantially preserved and used to perform various indexing and processing



operations. The native format of the electronic legal documents can include the various software program platforms used to create the electronic legal document.

Referring first to Figure 1, shown generally at 100 is a system according to an embodiment of the invention. The system 100 can be implemented  
5 by a network 110, such as the Internet, but other types of communication networks may be utilized as well. For example, the network 110 can comprise a local area network (LAN), virtual local area network (VLAN), asynchronous transfer mode (ATM) network, or other network or portion of a network.

The system 100 includes one or more network servers 112  
10 communicatively coupled to one or more terminals 114 via one or more links 116. The terminals 114 can comprise personal computers (PCs) of a law firm, for example, that are used by legal professionals (e.g., users) to access the server 112. The terminals 114 each have a display screen 118 that allows users to view information sent to and from the server 112. Other types of terminals 114 besides  
15 PCs can be used. For example, the terminals 114 can include workstations (e.g., dumb terminals) connected to an internal computer network, enhanced-functionality wireless devices having display screens, laptops, television monitors, etc.

The server 112 can comprise part of a server cluster, where there is more than one server 112 such that if one of the servers fails, there are backup  
20 servers available. According to one embodiment, the server 112 can be one or more servers specifically dedicated to the law firm that uses the terminals 114, with the law firm being the only party authorized to access the server 112. In another embodiment, one or more law firms may share the same server 112, with suitable access and security mechanisms being utilized to ensure that each law firm's  
25 transactions with the server 112 (or information reviewed and stored in the server 112) are kept confidential from each other.

The link 116 can include any type of high-speed data line(s) or network(s) that can accommodate high-speed bit rates, including T1, xDSL, SONET, ATM, Ethernet, etc. Telephone modem links may also be used. The link 116 can comprise hardwire links (e.g., twisted pair, optical fiber, coaxial, etc.) or wireless links (e.g., radio frequency, cellular, satellite, microwave, optical, etc.). A person skilled in the art will further appreciate that the speed of transmission of data via the link 116 may also vary from one system 100 to another, based on factors such as type of network or communication medium, level of network traffic, size of files being transmitted, etc. Therefore, embodiments of the invention are not limited by the specific type of terminals, networks, communication medium, data rate, etc. that are used by the system 100.

The system 100 can include one or more databases systems 120 to store electronic legal documents. The database system 120 can be part of the server 112 or it can be a separate network component communicatively coupled to the server 112. As will be explained in detail further below, the electronic legal documents stored in the database system 120 can be searched, sorted, processed, or saved using an engine 122. Because the terminals 114 are granted access to the database system 120 by the server 112, legal professionals using the terminals 114 can use the engine 122 to remotely search, sort, or process the electronic legal documents stored in the database system 120.

The database system 120 can store user input and other information saved by the user at the terminal 114. For example, and as will be explained later below with reference to Figures 2 and 4-6, the user can append identifiers (e.g., processing information such as whether a document is "hot") to relevant electronic documents being reviewed and then save these identifiers in the database system

120. Once stored in the database system 120, these electronic documents can be repeatedly accessed and their processing information modified, if desired.

According to another embodiment, results of the searching, sorting, processing, saving, etc. remotely performed by the legal professionals at the terminals 114 can be separately stored in a results storage unit 124, instead of or in addition to storing the results in the database system 120. The results storage unit 124 and the database system 120 can comprise any number of machine-readable or computer-readable medium, including but not limited to, random access memory (RAM), compact disks (CDs), digital video disks (DVDs), magnetic tape, floppy disks, microcode, and other mass storage units. In some embodiments, the results storage unit 124 can be part of the database system 120 or the server 112, while in other embodiments, the results storage unit 124 may be a separate component in the network 110. In other embodiments, the results storage unit 124 may be located in close proximity to the terminals 114 (e.g., in a hard drive of one of the terminals 114 or in a server located in the law firm's computer network). Accordingly, the embodiments of the invention are not limited by the specific type of storage medium used by the results storage unit 124 or by the database system 120, or by their specific location.

The system 100 can include a user authentication unit 126. The user authentication unit 126 stores passwords, security codes, or other confidential access information required for granting the terminals 114 with access to the server 112. Each time any of the terminals 114 requests access to the server 112, that terminal sends a password, for example, to the server 112, which then grants access if the password matches the authorized password stored in the user authentication unit 126. Each terminal 114 (e.g., each legal professional using their respective terminal 114) may be assigned a distinct password. In one embodiment,

each legal professional is assigned a user account, and each law firm is assigned to a server cluster. Providing separate passwords to each legal professional allows each of them to maintain separate "user accounts" to store results of their individual document review or to allow them to manage their individual dockets. Individual  
5 user accounts, in turn, can have one or more sets of information that may be accessible to other users, while other sets of information are not shared.

Other types of security/access mechanisms may be used by the system 100. Another example is a secure identification (ID) token that changes based upon time and works in conjunction with a user's personal identification  
10 number (PIN).

The system 100 can further include a user information unit 128 to store information specific to the law firm or users of the terminals 114. Such information stored in the user information unit 128 can include, for example, address information, billing information, communication system information, etc.

15 Information systems 130 typically are the source of the electronic legal documents. The information systems 130 can belong to a party being requested to produce documents, for example. In one embodiment, the information systems 130 can download its electronic documents (in its native format) into storage media 132 (e.g., CDs, DVDs, magnetic tape). As will be described below with reference to  
20 Figure 3, the information stored in the storage media 132 is, in turn, converted and indexed into a database format by a conversion engine 134 for storage into the database system 120.

It is also possible to provide an embodiment where the information systems 130 can provide the electronic documents directly to the conversion engine  
25 134, without intermediately downloading the electronic documents into the storage media 132.

The server 112 may be communicatively linked to an administration unit 136. The administration unit 136 can be, for example, a company that provides and maintains the services of the server 112, including but not limited to, coordination of data downloads into the database system 120, providing user  
5 accounts and passwords for the terminals 114, providing customer service support, processing billing and account information, etc.

Figure 2 shows in more detail the structure and operation of the database system 120. The database system 120 includes a plurality of server units 202-208, which can include machine-readable or computer-readable media storing  
10 relational databases or other types of databases (and their associated tables of data). The server units 202-208 (and their databases) can in turn be operated, processed, or controlled by suitable database algorithms and software.

The server units 202-208 are accessible by the engine 122 such that the engine 122 can perform transactions (e.g., send search queries, receive search  
15 query results, perform read/write operations) with the server units 202-208. The engine 122 is coupled to the server 112, via the server unit 206, thereby allowing the users at the terminals 114 to perform transactions with the server units 202, 204, and 208 using the engine 122.

As previously described above, the components shown in Figure 2 can  
20 be separate network components communicatively coupled within the system 100. It is also possible to provide an embodiment where one or more of the components shown in Figure 2 are physically located within the server 112. Accordingly, embodiments of the invention are not limited by the specific location of the various components shown in Figure 2.

25 Databases or other storage media of the server units 202, 204, and 208 receive their data from the conversion engine 134, with the conversion engine

134 formatting the data for storage and subsequent indexing, including substantially preserving electronic characteristics (e.g., metadata) associated with the native format of the electronic legal documents. According to an embodiment of the invention, the server unit 202 can use a commercially available indexing search  
5 engine format and algorithms, the server unit 204 can use a commercially available ANSI SQL-compliant database format and related algorithms and data structures, the server unit 206 can use a world wide web (web) server, and the server unit 208 comprises a file server.

The server unit 208 stores read-only formats of the electronic legal  
10 documents, such as email messages or other electronic files involved in one or more litigation cases. The server unit 202 stores catalogs, databases (and corresponding tables) that index the textual content of the electronic legal documents stored in the server unit 208, as schematically represented in Figure 2 by an arrow between these two server units. This allows the engine 122 to perform  
15 key word (e.g., text) search queries on the contents of the server unit 202. The server unit 204 stores databases (and corresponding tables) that contain metadata, threading, directory path, attachment, and properties information for the electronic legal documents stored in the server unit 208. This allows the engine 122 to perform search queries on the contents of the server unit 202, based on search  
20 criteria such as Bates number, source, recipient, date of transmission, modification date(s), cc'ed individuals, etc. The server unit 206 has, in one illustrative embodiment, Active Server Page (ASP) formatted pages through which users at the terminals 114 access the engine 122.

In operation, when the user sends a text or key word search query  
25 from the terminal 114 to the server 112 through the server unit 206, the engine 122 applies the query to the contents of the database(s) in the server unit 202, which

can comprise cataloged information of the contents of the server unit 208. After identification of database entries matching the search query, the search query results are sent from the server unit 202 back to the engine 122 through the server unit 206, which in turn returns the search query results to the terminal 114. If any of  
5 the documents identified in the search query results is subsequently requested for viewing by the user, then a copy of that document is retrieved from the server unit 208 by the engine 122 and transmitted through the server unit 206 to the terminal 114.

Similarly, when a non-textual or metadata content search query (e.g.,  
10 a search query requesting email messages sent by a specific individual on a specific date, etc.) is sent by the user from the terminal 114 to the server 112 through the server unit 206, the engine 122 applies the query to the contents of the database(s) in the server unit 204. The server unit 204 also can be searched in this fashion to identify a plurality of email messages belonging to a conversational thread and to  
15 identify attachments of email messages. After identification of database entries matching the search query, the search query results are sent from the server unit 204 back to the engine 122 through the server unit 206, which in turn returns the search query results to the terminal 114. If any of the documents identified in the search query results is subsequently requested for viewing by the user, then a copy  
20 of that document is retrieved from the server unit 208 by the engine 122 through the server unit 206 and transmitted to the terminal 114.

If the search query sent by the user from the terminal 114 is a combination of text and metadata (e.g., a request for email messages sent by a specific individual on a specific date, discussing a certain subject matter), then the  
25 search engine 122 can perform a parsing operation to split the query into a metadata search and a text search, where it first sends the query to the server unit

204 to identify documents matching the metadata search criteria. The server unit 204 then links with the server unit 202 to identify documents matching the textual search criteria. As before, the search results are returned to the engine 122 through the server unit 206 and then transmitted to the terminal 114. If any of the documents identified in the search query results is subsequently requested for viewing by the user, then a copy of that document is retrieved from the server unit 208 by the engine 122 through the server unit 206 and transmitted to the terminal 114.

It is possible to provide other embodiments of methods for doing mixed queries rather than by linking the server unit 204 to the server unit 202. For example, it is possible to do searches on both server units simultaneously and independently, and then combine (and narrow) their search results.

As will be explained below with reference to Figure 4, the user may perform electronic processing operations on the copy of the electronic legal document(s) retrieved from the server unit 208. Such operations may include, for example, marking hot documents, marking a document as being reviewed or not reviewed, etc. and saving such user-input information. According to an embodiment of the invention, this user-input information may be saved in the databases of the server unit 204. That is, tables of relational databases in the server unit 204 may be updated to reflect the user-input information, and then the saved user-input information can be retrieved when the electronic legal document to which they pertain is subsequently requested for review. It is also possible to save user-input information in the server unit 202 or in the results storage unit 124 (see, e.g., Figure 1).

Referring next to Figure 3, an embodiment of the conversion engine 134 is shown. The conversion engine 134 converts electronic legal documents from



their native format into a format suitable for storing and indexing in the database system 120 described above, while still maintaining electronic characteristics (e.g., metadata including threading information, attachments, properties, directory structures, etc.) associated with the native format.

5 Initially, Figure 3 shows that the electronic legal documents are provided by the information systems 130 or storage media 132 of Figure 2. The electronic legal documents can be plurality of different file types 310. As examples, File Type 1 can be (Microsoft Outlook™) Exchange™ files having a .pst file extension, while File Type 2 can be IBM Lotus Notes™ files having a .nsf file extension. These file types can further include appointment calendars and contact lists, and other types of objects associated with such email platforms/programs.

10 One of the file types 310 is labeled in Figure 3 as "All Files," which can include non-email file types, File Type 1, File Type 2, etc. Non-email file types may include files created by all sorts of software programs and can include files having .doc, .txt, .rtf, .xls, .wp5, etc. file extensions, for example. The file types 310 are often arranged according to a directory structure, such as a tree structure, with email file types often storing data in an internal directory structure that has multiple paths and multiple objects. There can be any number of file types, files, objects, etc. provided by the information systems 130 or storage media 132.

15 20 The conversion engine 134 includes a plurality of recursive engines 312-316 to process the file types 310, with this processing shown symbolically in Figure 3 by a single arrow from the file types 310 to the recursive engine 314. The recursive engines 312-316 "recursively" go through every path in a directory structure and extracts the files in each path, while still preserving the directory structure from which the files are taken. While three recursive engines 312-316 are shown in Figure 3, there can be any number of recursive engines used, with each

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recursive engine corresponding to a different file type 310. That is, for example, the recursive engine 312 extracts files having File Type 1 file extensions from directories, and the recursive engine 316 extracts files having File Type 2 from directories. The recursive engine 314 extracts files having non-email file extensions  
5 from directories. Because the individual files themselves may have attachments that are of a different file type (e.g., an email may have a .doc attachment), one embodiment of the invention has recursive engines 312-316 that extract the files and their attachments together, without separating the attachment from the email. In another embodiment, the recursive engines 312-316 do perform a separation  
10 such that the email is extracted by the recursive engine 312 (or 316), and the attachment (non-email format) is extracted by the recursive engine 314, while the information noting the relationship between the email and attachment is preserved.

According to one embodiment, any one of the recursive engines 312-316 can first analyze the electronic legal documents provided by the informations  
15 systems 130 and/or storage media 132 to determine if these electronic legal documents include file types that it can extract. In other words, the recursive engine 312 searches for files (and directories) that have File Type 1 file extensions, for example. In another embodiment, there may be a separate engine (not shown) that analyzes the electronic legal documents to determine their file type(s) or file  
20 extensions and then directs the appropriate recursive engine 312-316 to the corresponding files, so that the directed recursive engine can perform its file extraction. In yet another embodiment, the recursive engines 312-316 can cooperate with each other such that if a file having a different file type is identified by one of the recursive engines 312-316, it can call one of the other recursive engines  
25 to extract that file. For example, the recursive engine 314 can review all of the file types 310 and then call the other recursive engines 312 and 316 if it finds file types

that the recursive engines 312 and 316 can process, as shown symbolically in Figure 3 by arrows pointing from the recursive engine 314 to the other recursive engines 312 and 316.

Once the files (and their directory structure) have been extracted by the recursive engines 312-316, a plurality of controllers 318-322 corresponding to a respective recursive engine perform operations on the extracted files. For instance, the controllers 318 and 322 analyze the files provided by the recursive engines 312 and 316, respectively, and send them to a converter 324 if the files contain email and related messages. The converter 324 then converts/translates these email and related messages into converted files 326 having a format that can be displayed and/or manipulated in a browser window at the terminal 114. For example, each email message or each calendar entry can be converted into one of the converted files 326. According to one embodiment, the converted files 326 can comprise HTML files, and it is understood that the converted files 326 can comprise other types of files. The converted files 326 are stored in the server unit 208.

If the files provided to the controllers 318 and 322 are emails and related messages having attachments, then the attachments are sent to a converter 328. The converter 328 translates these attachments into converted files 330 having a format that can be displayed and/or manipulated in a browser window at the terminal 114. The converted files 330 are also stored in the server unit 208. According to one embodiment, the converted files 330 can comprise .pdf files, and it is understood that the converted files 330 can comprise other types of files. One advantage of converting attachments into .pdf format is that .pdf files provide a layer where textual content of the attachments can be indexed, searched, or processed (e.g., highlighted).

The converter 328 can incorporate a number of software packages or tools to allow it to read, launch, and convert the attachments. For example, the converter 328 can use multiple versions of most application programs and/or use various application programs that can read and translate files created from other types of application programs.

Metadata, including conversational thread information, properties, and other electronic characteristics of the files (e.g., electronic legal documents) are extracted by the controllers 318 and 322 and directed to an upload unit 332. The upload unit 332 stores this electronic characteristic information in databases and tables 334 in the server unit 204.

The controller 320 functions similarly as the controllers 318 and 322, except that it processes non-email files. As with attachments to email files, these non-email files are sent by the controller 320 to the converter 328, which converts the files into the format of the converted files 330. Metadata, including directory path information, and other electronic characteristics of these non-email files are sent by the controller 320 to the upload unit 332 for storage in the database and tables 334 in the server unit 204.

To the extent that, while processing files, the controllers 318-322 identify files having different file formats, one embodiment of the conversion engine 134 allows the controllers 318-322 to call an appropriate controller that can process that different file format. For instance, if the controller 322 finds an email attachment having a format corresponding to a format that is designed to be processed by the controller 318 or by the controller 320, then the controller 322 can call these controllers to perform the required processing.

An administration library having administration programs 336 creates a directory structure 338 in the server unit 208. The directory structure 338 is used to

manage and index the converted files 326 and 330. The administration programs 336 further create catalogs and directory parameters 340 in the server unit 202. The catalogs and directory parameters 340 point to specific pieces of data in the converted files 326 and 330 and in the directory structure 338, thereby allowing text  
5 searches to be performed as previously described above.

For the information stored in the database and tables 334 in the server unit 204, the administration programs 336 also creates catalogs and database parameters (not shown) that allows metadata searching to be performed as described above. Additional functions of the administration programs 336 are to  
10 create a virtual directory 342 in the server unit 206. The virtual directory 342 helps the user at the terminal 114 to use the engine 122 to search for and locate the various information converted and stored by the conversion engine 134. Miscellaneous system catalogs and database parameters 344 can be created by the administration programs 336 to allow various user access and management  
15 information to be stored and used by the administration unit 136, user authentication unit 126, and/or the user information unit 128.

The recursive engines 312-316, controllers 318-322, converters 324-328, upload unit 332, and administrative unit 336 can comprise suitable software programs and/or algorithms/routines that are stored in one or more computer-  
20 readable storage media, as well as corresponding hardware to allow the software programs to perform their functions as described above.

Although email messages are described throughout this description as one form of electronic legal document that may be processed by the conversion engine 134, it is understood that embodiments of the invention may be made  
25 applicable to other types of electronic legal documents. Other examples include file directories and electronic files (e.g., a word processing file, graphics file, etc.) that

are not necessarily attached to email messages. The conversion engine 134, using the controller 320, can convert these types of electronic documents for storage and indexing in the database system 120 such that the directory structure(s), file and properties information, and other such native format data are substantially preserved. Another example includes electronic legal documents derived from scanned printed documents using optical character recognition (OCR). In such a case, the conversion engine 134 can use fuzzy logic algorithms that can reconstruct threads based on the information appearing on the printed documents.

Figure 4 shows an embodiment of a user interface 400 according to an embodiment of the invention. The user interface 400 can comprise a graphical display generated on the display screens 118 of the terminals 114 by commercially available web browsers, such as Microsoft's Internet Explorer™ or Netscape's Navigator™. The user interface 400 includes controls 410 and a menu bar 412. An address field 414 can display a uniform resource locator (URL) address of the server 112 or an address of any other network component of the system 100 that provides the information displayed by the user interface 400.

The user interface 400 displays representation of an email message 416 in one of its viewing windows. The email message 416 can be displayed in a format in the viewing window such that the email message 416 appears substantially the same as it would have appeared had it been displayed in its native form. Although the email message 416 is typically one of the electronic legal documents produced in response to discovery requests that is stored in the database unit 120, it is understood that other types of electronic document may be stored and displayed. Like conventional email messages, the email message 416 includes a "To" field that identifies its recipient, a "From" field that identifies its sender, a "Date" field that identifies the date of transmission, and a "Subject" field

that identifies the subject of the email message 416. The email message 416 may also contain other relevant information such as cc and bcc addresses (not shown). The email message 416 further includes text 426, and possibly one or more attachments 428. The attachment 428 can comprise any type of file, including graphic, text, executable, and application files. As previously described above, each of these items in the email message 416 can be searched for and reviewed by embodiments of the invention. Each email message 416 is also assigned with a Bates number 430 to identify that particular email message from other email messages produced during discovery.

The user interface 400 can include a plurality of sequencing buttons 432-438. If the button 432 is pressed (e.g., clicked on by a mouse of the terminal 114), an email message "preceding" the currently displayed email message 416 is displayed. If the button 434 is pressed, an email message "subsequent" to the currently displayed email message 416 is displayed. The "preceding" email message can be an email message having a Bates number immediately prior to the Bates number 430 of the currently displayed email message 416, or the "preceding" email message can be a previous email message in a group of email messages (e.g., email messages retrieved in response to a search query by the user, email messages sent by a particular individual, etc). Similarly, the "subsequent" email message can be an email message having a Bates number immediately subsequent to the Bates number 430 of the currently displayed email message 416, or the "subsequent" email message can be a subsequent email message in a group of email messages.

Clicking on the button 436 results in the display of a previous email message, if any, in a conversational thread of the displayed email message 416. Similarly, clicking on the button 438 results in the display of a subsequent email

message, if any, in a conversational thread of the displayed email message 416. When the buttons 436 and 438 are clicked to view emails in a conversational thread, a metadata query is in effect sent from the terminal 114 to the engine 122 through the server unit 206, and then subsequently to the server unit 204 or to the server unit 208 such that the requested email message can be retrieved. Accordingly, an advantage is provided by this embodiment of the invention over existing document review methods in that conversational threads are automatically linked from one email message 416 to another, and thus can be easily followed and reviewed by the user.

10           The user interface 400 can include a caselist button 440 that, if clicked, results in the display of a list showing the user's docket of cases, cases being handled by the user's law firm, or both. If any of the cases listed on the displayed docket is selected, then electronic legal documents from that selected case may be accessed and processed by the user.

15           The user interface 400 can further include a summary button 442 that, if clicked, displays processing summary information for electronic documents for particular cases. An example of the summary information will be explained in further detail below with reference to Figure 5. An exit button 444 allows the user to exit the system 100.

20           The user interface 400 can provide identification information to assist the user. For example, case information 446 identifies the current user who is reviewing the email message 416, a party that produced the email message 416, and the name of the case. Document information 448 provides further information specific to the displayed email message 416, including its Bates number, number of  
25           properties and metadata, and number of attachments.



A plurality of document processing boxes 450 may also be provided for each email message 416. The user can check off one or more of these processing boxes 450 to indicate whether the displayed email message 416 is reviewed, responsive, privileged, hot, or suitable for witness preparation. If the user wishes to add the displayed email message 416 to a customized collection, then one or more custom collection boxes 452 may be checked off. A customized collection can be any type of collection of electronic documents that the user wishes to establish. For example, there may be a customized collection of email messages received by a specific individual, a customized collection of email messages relating to a subject matter, a customized collection of email messages sent by an individual during a specific month, etc. The custom collection may in turn be designated as private so that only the user can access that user's custom collections, or designated as public so that other users may have access to the custom collections.

After the user has finished processing the displayed email message 416 (e.g., has indicated that the email message 416 is reviewed, responsive, etc. by checking off the processing boxes 450 or has assigned the email message 416 to a custom collection by checking off the custom collection boxes 452), a submit button 454 can be clicked to "save" the user's processing results. Saving the user's processing results involves updating relational database tables in the server unit 204 associated with the currently displayed email message 416. The relational database tables thus store and update information indicating that the email message 416 is reviewed, responsive, etc. or is assigned to a custom collection. Thus, whenever that particular email message 416 is subsequently requested for later review via the user interface 400, the saved information associated with the processing boxes 450 or the custom collection boxes 452 can be viewed.

According to one embodiment of the invention, a submit and go next button 456 can be provided. This button 456 allows the user's processing results for the currently displayed email message 416 to be saved, subsequently followed by automatic display of a next email message in the sequence.

5 In addition to the processing buttons 450 that provides status/summary information for each email message 416, it is possible to provide a "highlighting" function to highlight specific portions (e.g., portions of the text 426) of each email message 416. Such highlighting functions are useful for quickly locating highly relevant text. For example, the terminal 114 and user interface 400 can be provided  
10 with features such that if the user uses a mouse to click and drag over regions of the email message 416, those regions become boldface, change text color, have their background highlighted in yellow, etc. A subsequent click of the submit button 454 saves the highlighted specifications to the server 204 so that they can be reviewed later.

15 The system 100 may be provided with searching capability via the user interface 400 such that if a find button 458 is pressed, a search according to a keyword query entered in a search field 460 is conducted. The search may be a Boolean search if a Boolean box 462 is checked. Examples of search criteria include source, recipient, cc'ed individuals, date, and associated threads. It is also  
20 possible to provide natural-language-searching capabilities, and to save search results or search queries, as will be described later below with reference to Figure 6. The method by which an embodiment of the invention conducts a search of stored email messages 416 was previously described above with reference to Figure 2.

Other features may be provided to the user to assist the user in  
25 reviewing electronic documents. An example includes an ordering button 464 that provides the user with several options as to the manner in which email messages

416 are displayed by the user interface 400. Also, the user may be provided with a field (not shown) where the user can enter (and subsequently save and display) notes or comments regarding the displayed email messages 416. The user may also be provided with conversational group features that allow several users to  
5 access and share, between them, each other's notes/comments regarding specific email messages 416.

In summary, electronic documents are stored in the system 100 such that electronic characteristics associated with a native format of the electronic documents can be used in conjunction with the user interface 400 to provide the  
10 user with document processing capabilities that are unavailable with traditional methods of processing hardcopy legal documents. Documents may be electronically and easily searched, identified, tracked, and subsequently recalled at a touch of a button (or click of a mouse). Further, because of the network configuration of an embodiment of the invention that provides multiple, remote  
15 access to electronic legal documents, the need to confine a group of legal professionals in a single room to sift through a single copy of printed hardcopies is eliminated.

Figure 5 shows processing summary information associated with electronic documents stored in the database system 120. The user interface 400  
20 displays this summary information if the summary button 442 is pressed, for example. Summary information regarding the electronic documents may be displayed according to different categorical criteria 512, including but not limited to, source, recipient, date, Bates number, or custom collection. In the example shown in Figure 5, the summary information is displayed according to the "sources" of the  
25 email messages. The "sources" of the email messages include a plurality of individuals' names 514 that sent email messages. Each individual name 514 in turn

has a total 516 identifying the number of email messages sent by each individual and which are stored in the database system 120. From the total 516, there is a breakdown of how many of these email messages are responsive 518, not responsive 520, hot 522, suitable for witness preparation 524, privileged 526, not reviewed 528, and reviewed 530. Each of the other criteria 512 (e.g., date, Bates number, etc.) is also provided with these categorical totals.

Each of the individual names 514 or the numbers within the categorical totals 516-530 can be provided with hypertext or search query links such that the user can click on these links to view the corresponding electronic documents. That is, for example, if the numeral 31 of the "hot" documents for "Trish M." is clicked, then each of the 31 email messages are retrieved and displayed similarly as shown in Figure 4 for review by the user.

If the displayed summary information shown in Figure 5 are hypertext links, then clicking on the hypertext links results in a redirection of the user's browser to a URL address in the system 100 where the requested electronic documents may be reviewed. If the displayed summary information shown in Figure 5 are search query links, then clicking on one of these links triggers a query by the engine 122 through the server unit 206 to the server unit 202, server unit 204, server unit 208, or any combination of these, such that the requested documents are retrieved from the server unit 208 and displayed by the graphical interface 400. For instance, clicking on the numeral 31 "hot" documents for "Trish M." formulates a query which may be in the form: Trish M./Total/Reviewed/Responsive/Hot. A different query may be in the shorter form: Trish M./Hot, with the various query formats dependent on factors such as type of search algorithm used by the engine 122, type of database structure and organization, relational database type, etc.

The summary information shown in Figure 5 provides the user, or other users in the law firm, with a convenient and simple display that categorizes and identifies the most relevant results of document review. Further, the most highly relevant documents can be easily identified from a list and then accessed/retrieved  
5 by selectively clicking on a link, which is a significant advantage over existing methods where relevant documents are manually indexed and retrieved.

Figure 6 shows the manner in which the user interface 400 can display search query results if the user submits a search query by entering a search query in the search field 460, checking the Boolean box 462 if appropriate, and then  
10 clicking the find button 458. After the find button 458 is clicked, the search query is submitted by the engine 122 to the server unit 202, server unit 204, or both. The search algorithm described above with respect to Figure 2 is used, and then the engine 122 returns the search query results to the terminal 114 for display by the user interface 400 according to Figure 6.

15 The search query can be displayed on a window 510, along with one or more listings 512 identifying relevant email messages. Each listing 512 can in turn be accompanied with text and document information 514. The information 514 can include, for example, an excerpt of the email message having the key words of the query, the first few lines of the email message, etc., along with other information  
20 such as date, source, recipient, etc.

The listings 512 can be hypertext or search query links themselves, such that if they are clicked, the engine 122 retrieves a copy of that email message from the database system 120 and displays the retrieved copy according to Figure 4. The user interface 400 may also be provided with fields (not shown) to allow the  
25 user to enter a listing number of an email message to be retrieved (e.g., by entering a "2" to retrieve search result #2).

The user interface 400 may be further provided with a save query button 516 that allows a query and/or corresponding search results to be saved. A query maintenance button 518, if clicked, provides the user with menus to allow the user to modify a query, retrieved saved queries, prepare a new query, etc.

5 In summary, embodiments of the invention provide a system and method where electronic legal documents, such as email messages, can be stored in a database system 120 such that the electronic characteristics associated with the native format of the electronic legal documents are substantially preserved. The electronic characteristics that are preserved include metadata, conversational  
10 threads, attachments, and other electronic document information. Once in the database system 120, the stored electronic legal documents are indexed and can be searched by users at terminals 114. The users at the terminals 114 are provided with access to the database system 120 via the server 112. The terminals 114 have user interfaces 400 to provide the users with a variety of searching, processing, and  
15 saving capabilities, including the ability to follow conversational threads, view attachments, index and retrieve relevant documents, etc.

The above description of illustrated embodiments of the invention is not intended to be exhaustive or to limit the invention to the precise forms disclosed. While specific embodiments of, and examples for, the invention are described herein  
20 for illustrative purposes, various equivalent modifications are possible within the scope of the invention, as those skilled in the relevant art will recognize.

For example, although embodiments of the invention are described herein as being useful in the context of discovery during litigation, other areas of the legal practice may benefit from the described embodiments. Mergers and  
25 acquisitions and due diligence efforts, for example, involve the expensive, cumbersome, and time-consuming activities of sorting, analyzing, and indexing

voluminous amounts of documents in an effort to locate relevant information. Embodiments of the invention are thus well suited for processing electronic documents under these settings, and may be modified appropriately to be tailored to a particular application. For example, the user interfaces shown in Figures 4-6 have document processing boxes 450 that are tailored for litigation, but it is understood that such the document processing boxes 450 may be labeled for due diligence applications. Therefore, the embodiments of the invention are not limited by the specific format of the user interface 400.

Further, it is possible to provide embodiments where users can access the server 112 via a location remote from the terminals 114. For example, the server 112 may be accessed from the user's home via a dial-in modem, so that the user need not be present in the law office when performing document review.

These modifications can be made to the invention in light of the above detailed description. The terms used in the following claims should not be construed to limit the invention to the specific embodiments disclosed in the specification and the claims. Rather, the scope of the invention is to be determined entirely by the following claims, which are to be construed in accordance with established doctrines of claim interpretation.